

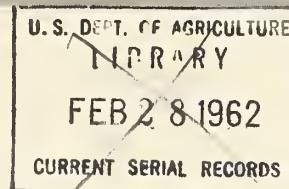
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FOREIGN AGRICULTURE CIRCULAR

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SUGAR
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YIELDS OF SUGARCANE, BEETS AND CENTRIFUGAL

SUGAR IN SELECTED COUNTRIES

The current world surplus and depressed prices of sugar, and the reshuffling of trade patterns brought about by the Cuban Castro Government's alliance with the Communist bloc have focussed more than usual interest on questions of relative efficiency of sugar production in various countries.

A basic, but by no means the only point of comparison between countries in this respect is yield. Yields can be expressed in terms of tons of sugarcane or sugar beets per acre harvested, production of sugar per ton of beets or cane, and production of sugar per acre.

This Circular is designed to provide such data for all countries for which reliable data are available. Annual extension and revision are tentatively planned.

Crop Yield Per Acre: One of the most striking facts shown by a study of sugar yields around the world is the tremendous variation from country to country. There is far more variation in this respect than there is from year to year in any one country.

If all beet sugar countries included in these tables are ranked in order of indicated 1961 beet yield per acre harvested, the yield for those nearest the center would be between 12 and 13 tons per acre. There are 7 countries with yields of less than 11 tons per acre, 11 countries with 11 through 15 tons per acre, and 7 countries with yields of 16 or more tons per acre. (See Table 1.)

Beet yields per acre are generally lower in Eastern than in Western Europe. Indicated yields are below 9 tons per acre in Rumania and in the U.S.S.R., and probably are below 7 tons per acre in Mainland China, not yet estimated for 1961. At the opposite extreme, yields in the Netherlands are expected to be more than 21 tons per acre.

In a similar ranking, yields in cane sugar countries are centered around a figure of 28 tons of cane per acre harvested, but with a very wide divergence on both sides of the center. There are 5 countries in which the sugarcane yield per acre harvested for sugar in 1961 is indicated to be less than 16 tons per acre. These are Burma, Pakistan, Paraguay, Thailand, and Uruguay. At the other end of the scale, there are 5 countries or states with yields of more than 40 tons per acre. These are British Guiana, Egypt, the State of Hawaii, Peru, and Surinam. The extremes are Burma, with an indicated yield of about 13 tons per acre, and Hawaii with nearly 88 tons. (See Table 2.)

In most areas of the world, there has been an upward trend in yield of sugar-producing crops per acre since the early 1950's. Increases in yields per acre generally have been greater with sugar beets than with sugarcane. However, with so much of the world's sugar beets being grown in Europe and the U.S.S.R. the effect of weather can be seen there as a result of the drought in 1959, the bumper crop year in 1950 and the less favorable year in 1951. Yet the wide differences which remain between countries in similar geographical areas imply that even greater yields can readily be obtained in many countries, given adequate economic incentive.

Sugar Output Per Acre: In terms of sugar manufactured per acre of beets or cane harvested, there is again a wide range between countries and areas. (See Tables 3 and 4.) However, the variation from country to country is much less extreme for sugar beets than for sugarcane. Indicated sugar output in 1961 is less than one ton per acre in only 2 countries (Rumania and the U.S.S.R.), and more than 3 tons per acre in only 2 countries (the Netherlands and Switzerland). For 13 countries, it is expected to be from 1 to 1.9 tons per acre and for 9 countries from 2 to 2.9 tons per acre.

Sugar output per acre of cane harvested in 1961 is expected to be between 2.0 and 3.9 tons for about half of all the cane sugar countries included. However, there are 3 countries, Panama, Paraguay, and Thailand, in which the sugar yield is expected to be below 1 ton per acre. In Peru, the yield is expected to exceed 8 tons per acre, and in the State of Hawaii it will approach 10.5 tons.

Sugar Per Ton of Sugarcane or Beets: The amount of sugar recovered per ton of sugarcane or beets put through the mill is affected by many factors, including the variety of sugar beets or cane grown, the stage of development and maturity at time of harvest, and the efficiency of the mill in recovering the sugar. Among the countries included in the present compilation, there seems to be no clear-cut and general upward trend in quantity of sugar produced per ton of beets or cane processed, except among the countries where this ratio was very low in the early 1950's.

Table 1.-SUGAR BEETS: Acreage, yield and production in specified countries, average 1950-51 through 1954-55, annual 1959, 1960 and 1961

Continent and Country	Acreage harvested			Yield per acre			Production $\frac{1}{2}$		
	Average:			Average:			Average:		
	1950-51 through 1954-55	1959	1960	1950-51 through 1954-55	1959	1960	1950-51 through 1954-55	1959	1960
North America:									
Canada.....	1,000	1,000	1,000	1,000	86	86	10.2	12.8	12.7
United States.....	92	92	898	1,090	15.5	18.5	17.3	16.8	16.5
Total.....	872	988	1,048	1,176	15.0	18.1	16.9	16.5	13,074
Europe:									
West -									
Austria.....	134	102	95	124	15.9	19.0	16.2	1.155	2,124
Belgium.....	152	155	154	16.3	10.3	21.8	16.7	2,479	1,940
Denmark $\frac{2}{2}$	164	137	135	15.2	12.8	18.2	16.8	2,492	3,376
Finland.....	28	36	38	43	10.1	8.3	12.5	11.2	2,158
France.....	297	980	1,092	206	13.2	8.8	17.7	13.4	300
Germany, West.....	553	728	739	650	15.8	13.0	19.1	15.4	475
Ireland.....	63	69	68	79	11.5	14.9	15.4	8,723	1,255
Italy.....	508	708	606	588	12.7	17.8	14.2	6,427	1,042
Netherlands.....	170	230	229	209	18.4	14.8	24.1	21.4	12,609
Spain.....	289	354	339	391	9.3	12.2	12.2	3,123	8,619
Sweden.....	134	126	125	125	15.0	15.2	21.3	2,687	5,511
Switzerland.....	15	13	13	13	15.9	22.1	20.8	4,320	4,480
United Kingdom.....	419	411	413	413	12.5	15.0	19.6	2,006	4,130
Total West Europe.....	3,585	4,084	4,054	3,762	13.6	13.1	17.8	15.5	5,219
East -									
Bulgaria.....	110	150	168	168	6.0	6.5	10.6	9.4	658
Czechoslovakia.....	583	600	598	598	10.4	9.4	15.4	12.9	977
Germany, East.....	527	579	588	593	11.7	8.9	11.9	9.3	6,052
Hungary.....	282	302	329	320	7.9	9.8	11.3	9.6	5,628
Poland.....	770	929	990	1,037	8.3	7.1	11.4	11.2	5,136
Romania.....	238	498	494	450	5.2	7.6	7.6	6,228	2,377
Yugoslavia.....	216	200	193	190	7.1	13.3	13.1	11.6	2,953
Total East Europe.....	2,726	3,258	3,360	3,356	8.9	8.5	11.7	10.4	1,543
Total Europe.....	6,311	7,342	7,414	7,118	11.6	11.1	15.0	13.0	23,200
U.S.S.R.....	3,565	6,805	7,512	7,821	6.5	7.1	7.7	7.1	48,137
Other Countries:									
China, Mainland.....	99	234	280	280	6.3	6.4	5.8	--	628
Japan.....	34	97	109	119	7.7	12.0	10.2	11.3	1,500
Turkey.....	135	405	487	322	9.2	9.4	9.2	1,239	1,166
Others.....	28	50	80	64	7.9	12.2	10.1	10.0	3,824
Total.....	296	786	956	505	7.9	9.0	8.8	9.8	2,352
Grand Total.....	11,044	15,921	16,930	16,620	10.1	9.7	11.5	10.4	111,726
									154,800
									195,441
									172,652
									55,776

$\frac{1}{2}$ / Quantity processed. $\frac{2}{2}$ / Preliminary. $\frac{3}{3}$ / Includes area and production of beets grown for export.

Foreign Agricultural Service. Official estimates of foreign countries, reports of Agricultural Attachés and other U.S. representatives abroad and results of research and other information.

Table 2.--SUGAR CANE: Acreage, yield and production in specified countries, average 1950-51 through 1954-55, annual 1959, 1960 and 1961

Continent and country	Acreage harvested				Yield per acre				Production					
	Average		1959		1960		1961 2/		Average		1959			
	1950-51 through 1954-55	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1950-51 through 1954-55	1959	1960	1961 2/	1959	1960	1961 2/	
North America:														
North														
United States														
Florida & Louisiana	307	296	307	324	21.8	23.1	23.2	26.5	6,692	6,844	7,137	8,600		
Hawaii	110	104	110	81.1	85.6	82.8	87.7	8,756	9,416	8,613	9,650			
Puerto Rico	335	328	340	29.2	30.4	30.5	31.6	10,941	10,182	10,000	10,754			
Virgin Islands of the U.S.	--	4	4	5	--	27.7	16.0	36.1	--	116	71	163		
Central														
Costa Rica 3/	49	65	76	92	15.6	16.7	17.8	17.5	762	1,094	1,358	1,603		
El Salvador	16	18	19	23	26.3	35.5	31.3	29.3	424	637	602	667		
Guatemala	--	21	25	27	--	34.9	34.9	34.9	--	717	875	933		
Mexico 3/	525	604	713	710	23.0	26.3	25.5	23.8	12,054	15,882	18,299	16,873		
Nicaragua 3/	42	49	53	57	18.5	21.4	22.4	21.4	779	1,038	1,138	1,221		
Panama 3/	--	34	36	37	--	25.0	26.8	26.8	--	858	882	992		
Caribbean														
Cuba	2,871	3,078	3,104	(3,400)	17.4	17.2	16.8	(17.9)	50,077	52,920	52,212	(60,900)		
Guadeloupe	4/ 47	61	64	4/ 32	26.6	27.7	28.6	32.3	4/ 1,253	1,691	1,857	2,066		
Martinique	4/ 30	31	32	37 4/ 4	28.2	32.2	31.4	31.2	4/ 834	999	1,005	1,156		
West Indies Federation:														
Antigua	4/ 10	12	12	(12) 4/	22.3	25.3	17.3	(25.0)	4/ 223	305	205	(300)		
Barbados	4/ 44	47	47	47	37.9	38.5	32.7	32.8	1,668	1,808	1,512	1,543		
Jamaica	4/ 126	175	187	(200)	30.5	24.5	26.0	(25.0)	3,138	4,285	4,892	(5,000)		
St. Kitts	4/ 15	14	14	(14) 4/ 2	30.9	34.2	34.3	(34.0)	4/ 458	465	490	(475)		
St. Lucia	4/ 4	2	2	2 4/ 1	25.8	37.6	32.5	33.5	4/ 103	93	76	77		
St. Vincent	4/ 2	1	1	1 4/ 1	24.0	36.6	41.0	31.6	4/ 48	54	45	38		
Trinidad and Tobago	72	84	87	(98)	22.8	25.0	28.3	(28.3)	1,239	2,092	2,472	(2,780)		
Total.....	4,643	5,041	5,216	5,600	21.5	22.1	21.7	22.5	99,849	111,496	113,641	125,791		
South America:														
Argentina	631	662	589	606	15.2	16.8	17.7	17.7	9,626	11,112	10,411	10,720		
Brazil	2,293	3,190	3,363	(3,660)	16.8	18.5	18.7	(18.6)	38,547	58,987	63,027	(68,100)		
British Guiana	4/ 68	89	99	(95) 4/	38.3	40.4	42.4	(41.1)	4/ 2,605	3,604	4,186	(3,900)		
Paraguay	33	51	52	(52)	11.4	12.7	12.9	12.8	375	644	671	666		
Peru	81	102	117	119	62.7	70.6	69.3	(71.0)	5,080	7,213	8,112	8,121		
Surinam	--	3	4	(4)	--	43.3	48.3	(48.0)	--	141	173	(173)		
Uruguay	4/ 4	5	5	5 4/	8.5	14.7	18.3	15.1	4/ 34	73	99	79		
Total.....	3,110	4,102	4,229	4,541	18.1	19.9	20.5	20.3	56,267	81,774	86,679	92,059		

Table 2.-SUGAR CANE: Acreage, yield and production in specified countries, average 1950-51 through 1954-55, annual 1959, 1960 and 1961 - Continued

Continent and country	Acreage harvested			Yield per acre $\frac{1}{1}$			Production		
	Average	1950-51 through	1959	1960	1959	1960	1959	1960	1961 $\frac{2}{2}$
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Average 1950-51 through	1954-55	1,000 short tons	1,000 short tons	1,000 short tons
Africa:									
Congo, Republic of the	4/ 9	13	--	4/ 19.7	20.4	--	4/ 177	265	--
Mauritius	169	188	194	(175)	25.6	13.6	4,328	5,219	2,638
Republic of South Africa	223	280	260	(279)	26.2	32.6	5,938	9,123	(4,850)
Rhodesia & Nyasaland,									9,500
Federation of	--	5	8	--	9	26.6	(34.0)	--	
U.A.R., Egypt	79	90	92	93	47.1	40.5	(35.0)	3,723	3,644
Total	480	576	554	556	29.5	31.9	14,166	18,378	15,465
									18,732
Asia:									
South and East									
Burma	62	88	93	96	15.4	13.2	(13.1)	952	1,146
China, Taiwan	203	215	227	(210)	28.2	32.4	(35.1)	5,717	6,988
India	4,175	5,178	5,734	6,100	14.5	16.2	16.6	60,488	84,043
Indonesia	--	242	197	193	--	36.4	36.8	--	8,818
Japan	9	13	16	18	10.7	12.7	32.1	96	7,165
Pakistan $\frac{3}{3}$	4/ 955	1,261	1,238	1,258	4/ 14.1	12.8	13.8	13,365	308
Philippines $\frac{3}{3}$	555	597	564	(605)	19.5	23.0	24.7	10,826	16,112
Thailand $\frac{3}{3}$	185	323	393	400	9.4	14.6	15.1	1,733	13,754
Total	6,139	7,926	8,462	8,880	15.2	17.2	17.7	93,177	135,976
Oceania:									
Australia	310	314	341	383	27.1	32.1	26.2	8,388	10,083
Fiji	55	88	--	(72)	22.8	31.1	(26.0)	1,294	2,741
Total	365	402	5/ 341	455	26.4	31.9	5/ 30.1	9,642	12,824
Grand Total	14,737	18,047	18,802	20,032	18.5	20.0	20.2	273,101	360,448
									376,767
									403,930

$\frac{1}{1}$ / Calculated before rounding of acreage and production.

$\frac{2}{2}$ / Preliminary.

$\frac{3}{3}$ / Includes acreage and production for non-centrifugal sugar.

$\frac{4}{4}$ / Short-time average.

$\frac{5}{5}$ / Australia only.

Figures in parentheses are tentative office estimates based on sugar production forecasts.

Foreign Agricultural Service. Official estimates of foreign countries, reports of Agricultural Attaches and other U.S. representatives abroad and results of office research and other information.

Table 3.-- SUGAR OUTPUT RATIOS: Tons of centrifugal sugar, raw value, produced per acre harvested and per ton of material processed; selected beet-sugar countries, average 1950-51 through 1954-55, annual 1959, 1960 and 1961

(Data in short tons, raw value)

Continent and Country	Tons of sugar produced									
	Per acre of sugar beets harvested					Per ton of sugar beets processed				
	Average					Average				
	1950-51	1959	1960	1961		1950-51	1959	1960	1961	
North America:										
Canada.....	1.54	1.68	1.88	1.77		0.141	0.122	0.148	0.139	
United States.....	2.29	2.61	2.55	2.38		0.148	0.141	0.147	0.142	
South America:										
Uruguay.....	1.21	0.89	1.23	1.13		0.124	0.119	0.135	0.126	
Asia:										
China, Mainland.....	0.91	1.07	0.86	-		0.143	0.167	0.149	-	
Japan.....	1.12	1.72	1.49	1.58		0.144	0.143	0.146	0.140	
Turkey (Europe and Asia).....	1.52	1.48	1.58	1.49		0.165	0.157	0.160	0.162	
Europe:										
West -										
Austria.....	1.90	2.43	3.18	2.78		0.153	0.153	0.167	0.171	
Belgium.....	2.60	1.52	3.58	2.67		0.159	0.148	0.164	0.160	
Denmark.....	2.14	1.98	2.70	2.81		0.141	0.154	0.148	0.167	
Finland.....	1.07	1.42	1.79	1.56		0.106	0.170	0.143	0.140	
France.....	1.55	1.18	2.75	1.98		0.118	0.135	0.156	0.128	
Germany, West.....	2.27	2.10	2.92	2.32		0.143	0.162	0.152	0.148	
Ireland.....	1.79	2.28	2.16	2.00		0.156	0.153	0.140	0.152	
Italy.....	1.63	2.19	1.78	1.86		0.129	0.123	0.125	0.131	
Netherlands.....	2.69	2.39	3.41	3.10		0.146	0.161	0.142	0.144	
Spain.....	1.24	1.61	1.58	1.53		0.134	0.132	0.130	0.127	
Sweden.....	2.47	2.48	3.16	2.66		0.165	0.164	0.148	0.155	
Switzerland.....	2.27	3.46	3.08	3.08		0.143	0.157	0.148	0.157	
United Kingdom.....	1.82	2.29	2.62	2.28		0.146	0.153	0.134	0.150	
East -										
Bulgaria.....	0.75	1.05	1.22	1.05		0.126	0.162	0.115	0.111	
Czechoslovakia.....	1.38	1.32	1.89	1.74		0.133	0.140	0.123	0.134	
Germany, East.....	1.62	1.51	1.65	1.21		0.138	0.170	0.138	0.130	
Hungary.....	1.01	1.40	1.60	1.28		0.127	0.143	0.141	0.132	
Poland.....	1.36	1.15	1.67	1.64		0.163	0.163	0.146	0.147	
Rumania.....	0.58	0.77	0.81	0.88		0.111	0.101	0.106	0.124	
Yugoslavia.....	0.73	1.48	1.64	1.45		0.102	0.110	0.126	0.125	
U.S.S.R. (Europe and Asia)....	0.84	0.92	0.88	0.90		0.130	0.140	0.114	0.125	

Foreign Agricultural Service. Official estimates of foreign countries, reports of Agricultural Attaches and other U.S. representatives abroad and results of office research and other information.



Growth Through Agricultural Progress

Table 4.--SUGAR OUTPUT RATIOS: Tons of centrifugal sugar, raw value, produced per acre harvested and per ton of material processed; selected sugarcane countries, average 1950-51 through 1954-55, annual 1959, 1960 and 1961

(Data in short tons, raw value)

Continent and Country	Tons of sugar produced								
	Per acre of sugarcane harvested			Per ton of sugarcane processed					
	Average 1950-51 through 1954-55	1959	1960	1961	Average 1950-51 through 1954-55	1959	1960	1961	
North America:									
North -									
United States.....	1.84	2.08	2.05	2.36	0.085	0.090	0.092	0.089	
Hawaii.....	9.87	8.51	10.48	10.45	0.122	0.099	0.127	0.119	
Puerto Rico.....	3.27	3.04	3.38	3.53	0.112	0.100	0.111	0.112	
Virgin Islands of the U.S.....	--	2.97	1.56	3.68	--	0.107	0.097	0.102	
Central:									
Costa Rica.....	0.67	0.85	0.97	1.03	0.043	0.050	0.054	0.059	
El Salvador.....	2.19	3.11	3.05	2.70	0.083	0.088	0.096	0.093	
Guatemala.....	--	3.67	3.76	4.19	--	0.107	0.107	0.121	
Mexico.....	1.71	2.87	2.23	2.58	0.075	0.109	0.087	0.109	
Nicaragua.....	0.88	1.43	1.40	1.79	0.047	0.067	0.065	0.084	
Panama.....	--	0.76	0.83	0.92	--	0.030	0.034	0.034	
Caribbean:									
Cuba.....	2.12	2.10	2.40	1.77	0.121	0.122	0.143	0.099	
Guadeloupe.....	2.23	2.75	2.85	2.97	0.084	0.099	0.100	0.092	
Martinique.....	2.17	2.87	3.19	2.76	0.078	0.089	0.101	0.088	
West Indies Federation									
Barbados.....	4.00	3.34	3.47	3.62	0.106	0.087	0.106	0.110	
Jamaica.....	2.89	2.67	2.63	2.50	0.116	0.109	0.101	0.100	
St. Kitts.....	3.67	4.00	3.71	4.00	0.120	0.120	0.106	0.118	
Trinidad and Tobago.....	2.49	2.96	3.16	2.65	0.109	0.117	0.111	0.094	
South America:									
Argentina.....	1.22	1.57	1.55	1.29	0.080	0.094	0.088	0.073	
Brazil.....	0.92	1.11	1.13	1.12	0.055	0.060	0.060	0.060	
British Guiana.....	3.91	3.82	3.69	3.68	0.102	0.094	0.087	0.090	
Paraguay.....	0.73	0.74	0.62	0.67	0.064	0.059	0.077	0.052	
Peru.....	7.75	8.86	8.05	8.11	0.124	0.125	0.116	0.114	
Surinam.....	--	4.00	3.00	3.00	--	0.085	0.069	0.069	
Uruguay.....	1.00	1.60	1.20	1.40	0.118	0.110	0.061	0.089	
Africa:									
Congo, Republic of the.....	2.00	3.00	--	--	0.102	0.147	--	--	
Mauritius.....	3.16	3.40	1.34	3.40	0.124	0.123	0.098	0.123	
Rhodesia & Nyasaland, Federation of.....	--	2.40	3.88	3.89	--	0.094	0.109	0.111	
South Africa, Republic of.....	3.09	3.79	4.05	4.04	0.116	0.116	0.122	0.119	
U.A.R., Egypt.....	3.34	4.43	4.23	4.62	0.071	0.109	0.100	0.106	
Asia:									
Burma.....	1.81	2.31	2.20	2.16	0.118	0.177	0.169	0.165	
China, Taiwan.....	3.58	4.10	4.60	4.48	0.127	0.127	0.128	0.128	
India.....	1.19	1.52	1.41	1.34	0.082	0.093	0.085	0.081	
Indonesia.....	--	3.89	3.77	3.71	--	0.107	0.104	0.101	
Japan.....	--	0.38	0.69	1.50	--	0.016	0.023	0.047	
Pakistan.....	1.09	0.96	1.04	1.05	0.078	0.075	0.075	0.076	
Philippines.....	2.26	2.67	2.70	2.76	0.116	0.116	0.109	0.117	
Thailand.....	0.59	0.80	0.70	0.77	0.063	0.055	0.047	0.051	
Oceania:									
Australia.....	3.63	4.46	4.41	3.89	0.134	0.139	0.146	0.148	
Fiji Islands.....	2.60	3.46	--	3.06	0.114	0.111	0.126	0.118	

Foreign Agricultural Service. Official estimates of foreign countries, reports of Agricultural Attaches and other U.S. representatives abroad and results of office research and other information.

